BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 11-2B-1,
VOLUME 3

20 MARCH 2015

B-1 - OPERATIONS PROCEDURES

COMPLIANCE WITH THIS PUBLICATION
IS MANDATORY

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ACCESSIBILITY: Publications and forms are available on the e-Publishing website at **www.e-Publishing.af.mil** for downloading or ordering.

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: HQ ACC/A3TO

Certified by: HQ USAF/A3O
(Brig Gen Giovanni K. Tuck)

Pages: 52

Supersedes: AFI11-2B-1V3,
7 January 2011

This volume establishes effective and safe operations of the B-1 and implements Air Force Policy Directive (AFPD) 11-2, *Aircraft Rules and Procedures*; AFPD 11-4, *Aviation Service*; and Air Force Instruction (AFI) 11-202, Volume 3, *General Flight Rules.* It applies to all B-1 units. This instruction does not apply to the Air National Guard. Major Commands (MAJCOM)/Direct Reporting Units (DRU)/Field Operating Agencies (FOA) will forward proposed MAJCOM/DRU/FOA-level supplements to this volume to HQ AFFSA/A3OF, through HQ ACC/A3TV, for approval prior to publication in accordance with (IAW) AFPD 11-2. After approval and publication, the issuing MAJCOM will provide copies of MAJCOM/DRU/FOA-level supplements, after approved and published, will be provided by the issuing MAJCOM to Headquarters (HQ) Air Force Flight Standards Agency (AFFSA) A3OF, HQ Air Combat Command (ACC) A3TV, and the user MAJCOM/ DRU/FOA and National Guard Bureau (NGB) offices of primary responsibility (OPR). Field units below MAJCOM/DRU/FOA level will forward copies of their supplements to this publication to their parent MAJCOMDRU/FOA office of primary responsibility for post publication review. **Note:** The terms DRU and FOA as used in this paragraph refer only to those DRUs/FOAs that report directly to HQ USAF. Keep supplements current by complying with AFI 33-360, *Publications and Forms Management*. See **paragraph 1.5** of this volume for guidance on submitting comments and suggesting improvements to this publication. (T-2)

Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records,

and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located in the Air Force Records Information Management System (AFRIMS).

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Major changes include: Tiered for Wing level and below requirements (T-0 through T-3) as per the new SAF/IG AFI 33-360. **Table 2.1** adds Combat Departure Fuel burn of 22,000 pounds. **2.6.7** updated to reflect Step Brief procedures and deletes references to Pre-takeoff Meeting. **3.4.2.4** adds Line Abreast (LAB) as an authorized formation as referenced in Air Force Tactics Techniques and procedures (AFTTP) 3-3.B-1, *Combat Aircraft Fundamentals--B-1*. **3.4.6.1** changed to align with Bone Standards. **3.4.8.2** includes datalink as a means of maintaining formation situational awareness. **3.4.9.2.12** adds LINK/MDS as a required item during ops checks. **5.3** adds Towed Decoy procedures, including Mission Lead Briefing items and unit-specific local procedures guidance. **6.3.1.2.5** deletes "PA & REL" as the switch is now checked in the "REL" position in accordance with (IAW) T.O. 1B-1B-34-2-1 procedures. **6.4**, Hung Weapon guidance, requires review of local guidance as well as SPINS and location-specific guidance during contingency operations. **7.4** adds guidance for unusual attitude recovery training in the aircraft. Min fuel of 20,000 pounds over a destination or alternate was deleted in **Table 7.1** as crews will base fuel planning on min landing fuel. Greater than two-ship formations are now authorized in **7.7.1** in support of WIC syllabus requirements or with OG/CC approval. The requirement for formations to fly with the same wing sweep configuration was deleted in **7.7.1.1.2** **7.7.1.3.3** adds additional guidance for Route/Fluid formations below 5,000 feet. **7.8.4**, use of anti-collision lights for re-establishing visual contact at night, was deleted due to night aircraft lighting requirements already required in Air Force Instruction (AFI) 11-202 Vol 3, *General Flight Rules*, paragraph 5.20. Paragraphs **7.10.1.1** through **7.10.1.4** were deleted and replaced **Table 7.10**, Minimum Altitudes for Low Altitude Training. This table authorizes Weapon Instructor Course (WIC) instructor Continuation Training (CT) at 200 feet AGL. **7.13.8**, prohibiting crews from executing closed patterns, was deleted. **7.14.2** updated to allow Global Positioning System (GPS) out procedures in Internal Navigation System – Replacement (INSR)-modified aircraft. **7.14.7.1** permits Avionics control Unit (ACU) reloads or INS coarse air alignments provided the Gyro Stabilization System (GSS) is operational and selected and the Tactical Air Navigation (TACAN) is operational. **7.16.3** added to provide guidance on Operational G-Limits. **7.16.5** incorporates guidance on aircraft tire wear limitations. **7.16.6** added to provide guidance on Overheated/Hot Brake procedures. Paragraph **7.18** added to provide guidance and references for supersonic flight. **Attachment 1** updates publication dates, adds AFI 13-201 ACC Supplement 1, *Airspace Management*, AFI 13-204, Volume 3, *Airfield Operations Procedures and Programs*, Air Mobility Command instruction (AMCI) 11-211, *Destination Airfield Suitability Analysis*, and T.O. 1B-1B-6, *B-1 Work Unit Code Manual*, and adds SB-16 specific terminology. **Attachment 3, 4, 5, 6**, and **8** briefing guides were deleted from this publication as they are now published in AFTTP 3-3.B-1, *Combat Aircraft Fundamentals--B-1*. The Passenger Briefing Guide is still maintained in this publication and is now referenced in **Attachment 2**. **Attachment 9**, Chemical, Biological, Radiological, Nuclear and Enhanced Conventional Weapons (CBRNE) Operations, is now **Attachment 3**. **Attachment 10**, Strange Field Familiarization, is now **Attachment 4** and was updated to include corrected web links, Airfield Qualification and

Familiarization Manual (AFQM) procedures in **A4.2.1**, as well as airfield support equipment requirements in **A4.4**

Chapter 1

INTRODUCTION

1.1. References, Abbreviations, Acronyms, and Terms. See **Attachment 1.**

1.2. Aircrew Responsibility. In conjunction with other governing directives, this instruction prescribes operating procedures for B-1 aircraft under most circumstances. It is not a substitute for sound judgment or common sense. Aircrew may accomplish operations or procedures not specifically addressed if they enhance safe and/or effective mission accomplishment.

1.3. Deviations. Deviations from these procedures require specific approval by the MAJCOM/A3 unless an urgent requirement or an aircraft emergency dictates otherwise. In that case, the pilot in command will take the appropriate action to safely recover the aircraft. (T-2)

1.4. Waivers. Unless another approval authority is cited, waiver authority for operational procedure requirements in this volume is the MAJCOM/A3, or Commander Air Force Forces (COMAFFOR) for those aircrew and assets under the COMAFFOR's oversight. COMAFFOR will notify HQ ACC/A3 and home station MAJCOM/A3 of waivers within 72 hours of approval. Waivers are valid for a maximum of one year from the effective date, unless canceled or the applicable publication guidance is revised. (T-1)

1.5. Instruction Changes. Procedures for reporting errors, suggesting revisions, and recommending corrective action will be submitted IAW AFI 33-360, *Publications and Forms Management*. (T-2)

1.5.1. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using AF Form 847, *Recommendation for Change of Publication*, using procedures in AFI 11-215, *USAF Flight Manuals Program (FMP)* and supplements.

1.5.2. HQ ACC/A3 will forward recommendations for changes to this volume to HQ AFFSA/A3OF for HQ AF/A3/5 approval. (T-2)

1.6. Supplements. Guidance for supplementing this publication is contained in AFI 33-360, *Publications and Forms Management,* and **Chapter 8** of this instruction.

Chapter 2

MISSION PLANNING

2.1. Flight Manuals. Aircrew will maintain applicable B-1 Technical Orders (T.O.) IAW AFI 11-215, *USAF Flight Manuals Program*. Except for publications required for flight (e.g. checklists), aircrew are not required to maintain T.O.s while on Temporary Duty (TDY) or deployed. (T-2)

2.2. Local Aircrew Aids. Units will develop locally produced aircrew aids and provide an information copy to HQ ACC/A3TV and Numbered Air Force (NAF) OPR. As a minimum, include the following information in sequence: (T-2)

2.2.1. Briefing guides (see suggested guides in AFTTP 3-3.B1, *Combat Aircraft Fundamentals*).

2.2.2. Tabulated takeoff and landing data, including emergency takeoff and landing data.

2.2.3. Weight and balance data for calculating local aircraft configurations.

2.2.4. Terrain following (TF) minimum mach tabulated data for in-flight TF check and low altitude operations.

2.2.5. Tabulated charts for Service Ceiling (SC) and Optimum Cruise (OC).

2.2.6. Divert, alternate, and emergency base information including runway data, approximate course/distance/estimated time en route (ETE), coordinates, and fuel required.

2.2.7. Hung weapons procedures, jettison/bailout areas, and hot brake areas/procedures.

2.2.8. On Scene Commander Procedures.

2.2.9. Other information as deemed necessary by the units.

2.3. Mission Planning Responsibility. Individual aircrews, unit operations, and intelligence functions jointly share responsibility for mission planning. The Mission Lead has the final responsibility for the accuracy of mission planning.

2.4. General Procedures:

2.4.1. Aircrew will accomplish sufficient flight planning to ensure safe mission accomplishment, to include fuel requirements, chart preparation, and takeoff/landing data using any certified computer based mission planning system. Until planning systems are certified for fuel computations, mission planners will cross-check fuel calculations for accuracy. (T-3)

2.4.2. Substitutions. Unit operations supervisors (or higher) may make crew substitutions as long as the substitute crewmember is thoroughly briefed and understands all aspects of the mission.

2.4.3. Standards. Aircrews will use the B-1 Mission Standards to the maximum extent possible. The B-1 Mission Standards do not replace established T.O.s or flight regulations. The OPR for the B-1 Mission Standards is the 77 Weapons Squadron (WPS). Forward recommendations for change to the 77 WPS Director of Operations (DO). (T-3)

2.4.3.1. Units may enhance/supplement the B-1 Mission Standards with unit-specific standards in support of the unit's mission. The operational commander for the level to which the standard applies is the approval authority.

2.4.3.2. Operations Group Standardization and Evaluation (OGV) functions will review all standards for standardization and compliance with AFI 11-series guidance and forward a copy to their parent MAJCOM/DRU/FOA. (T-2)

2.4.4. B-1 Weapons Attack Guide (WAG). The B-1 WAG is intended to aid aircrews in mission planning and for use during flying operations. It does not relieve aircrew from compliance with established T.O.s or flight regulations. Aircrew retain the responsibility of ensuring information referenced from the B-1 WAG is current, complete, and accurate in accordance with applicable sources. The OPR for the B-1 WAG is the 77 WPS. Forward recommendations for changes to the 77 WPS/DO.

2.5. Fuel Planning.

2.5.1. Fuel Conservation. Aircrew and mission planners will manage aviation fuel as a limited commodity and precious resource. Aircrew will consider fuel optimization throughout all phases of mission planning and execution. Excessive fuel adds to aircraft gross weight and increases fuel consumption. Aircrew should employ the following aviation fuel optimization measures without compromising flight safety or jeopardizing mission/training accomplishment: (T-3)

2.5.1.1. Aircrew and mission planners will optimize flight plans and flight routing for fuel efficiency. (T-3)

2.5.1.2. Delay engine start time when practical. Minimize aircraft weight through optimized fuel loads.

2.5.1.3. Establish procedures to ensure timely notification of mission changes/cancellations to avoid unnecessary or unproductive flight time.

2.5.1.4. Minimize enroute delays and fly enroute airspeeds appropriate for efficiency.

2.5.1.5. When cruise legs exceed 1 hour, aircrews should use the Fuel Center of Gravity Management System (FCGMS) optimum cruise mode and attempt to fly at or near the optimum cruise altitude and angle of attack (AOA) to the maximum extent possible. (T-3)

2.5.1.6. Aircrew should implement in-flight procedures such as climb/descent profiles and power settings for efficient fuel usage. (T-3)

2.5.2. **Table 2 1** lists approved estimated fuel flows to use when determining fuel requirements. Should more detailed fuel planning be required refer to T.O. 1B-1B-1-1, *Performance Data USAF Series B-1 Aircraft*. (T-3)

Table 2.1. Fuel Planning Factors (Reference T O 1B-1B-1-1, *Performance Data USAF Series B-1 Aircraft*).

Event	Fuel
Start Engines and Taxi	5,000 lbs total

Takeoff and Climb to Flight Level (FL) 200	12,000 lbs total (10 minutes)
Combat Departure to Flight Level (FL) 200	22,000 lbs total
Cruise	16,000 lbs/hr
Low Altitude Visual Contour or Terrain Following (TF)	38,000 lbs/hr
High Altitude Maneuvering/Afterburner (AB) Air Refueling	25,000 lbs/hr
Air Refueling	20,000 lbs/hr
Dissimilar Air Combat Tactics (DACT)	40,000 lbs/hr
Transition	20,000 lbs/hr
Endurance Fuel for Hours of Fuel on Board	12,000 lbs/hr (based on maximum endurance at 10,000 feet MSL, 245,000 gross weight (GW)

2.6. Briefing/Debriefing. (T-3)

2.6.1. All crewmembers will attend the mission briefing. Mission Leads will use briefing guides as a reference for the preparation and presentation of the mission briefing. Suggested briefing guides can be found in the AFTTP 3-3.B-1, *Tactical employment – B-1*. Units may use locally developed briefing guides in lieu of suggested briefing guides. Mission Leads may brief items listed in any logical sequence, but do not need to cover specific items not pertinent to the planned mission.

2.6.2. Mission Leads may brief items adequately covered in Standards as "standard."

2.6.3. Mission Leads will ensure briefing start time provides adequate time to discuss required briefing items depending on complexity of the mission and crew capabilities.

2.6.4. Mission Leads are responsible for presenting a logical briefing, which will promote safe, effective mission accomplishment. All formation flight briefings will cover flight member responsibilities, deconfliction contracts, mission priorities, and sensor management.

2.6.5. Mission Leads will brief and emphasize obstacle/ground avoidance anytime low altitude operations are planned. For low altitude operations over water/featureless terrain, emphasize minimum altitudes and spatial disorientation. If low altitude weapon employment is planned, emphasize weapon release parameters including planned speed, altitude, fuse settings, planned track, weapon interval, fragmentation deconfliction, and time/track tolerances. Units will designate an OPR to maintain low altitude and weapon activity data.

2.6.6. Mission Leads will brief an appropriate alternate mission for each flight if applicable. The alternate mission must be less complex than the primary and should parallel the primary mission. If not parallel, brief the specific mission elements that are different. Mission Leads may modify mission elements/events and brief them airborne as long as flight safety is not compromised. The Mission Lead will ensure all flight members acknowledge the changes.

2.6.7. Step Brief. Aircrew will accomplish a step-brief prior to stepping to the aircraft. The Mission Lead will ensure all crewmembers are briefed, at a minimum, on current/forecast weather, Notices to Airman (NOTAM), crew requirements, aircraft configurations, Top 3 interest items and any mission changes. (T-3)

2.6.8. Deployed Operations, Exercise, and Mission Plan Fly-Fly Briefings. If all flight members attend an initial or mass flight briefing, the Mission Lead on subsequent flights need brief only those items that have changed from the previous flight(s).

2.6.9. Debriefing: The Mission Lead will thoroughly debrief the mission. Refer to AFTTP 3-3.B-1, *Combat Aircraft Fundamentals--B-1*, for debrief guidance. At a minimum, the debriefing will include an evaluation of the mission objectives, desired learning objectives, lessons learned, execution errors, deconfliction contracts, in-flight execution of flight member responsibilities, mission/tactical employment priorities, and sensor management.

2.7. Chart Preparation:

2.7.1. Planning. Aircrew flying under Visual Flight Rules (VFR), inside Military Operating Areas (MOA), or on Military Training Routes (MTR) in the Continental United States (CONUS) will supplement existing mission planning materials (e.g. Chart Update Manual (CHUM), Flight Information Publications (FLIP) AP/1B, etc.) with either: (T-3)

2.7.1.1. Mission Planning System (MPS) chart with the following overlay options selected: Airports/heliports, airspace boundaries, airways, MTR, parachute jump and Special Use Area (SUA) boundaries.

2.7.1.2. Sectional aeronautical charts. **Note:** Use of sectional aeronautical charts in flight is not required.

2.7.2. Aircrew flying outside CONUS will follow gaining MAJCOM, theater or host nation guidance on mission planning. If no guidance exists, use the best charts or MPS overlay options available to accomplish the requirements of **paragraph 2.7.4** (T-2)

2.7.3. Local Area Charts. A local area chart is not required if aircrew in-flight guides include jettison areas and divert information and provides sufficient detail of the local area to remain in local MOA or other assigned areas.

2.7.4. Low Altitude Charts. On low altitude training flights, one member of the pilot team, the Offensive Systems Officer (OSO) and Defensive Systems Officer (DSO) will carry a chart. The chart will be of scale and quality that terrain features, hazards, noise sensitive areas, and chart annotations are of sufficient detail to allow individual navigation and safe mission accomplishment. Annotate charts with noise sensitive areas, location and dimensions of class B/C/D airspace, civil/military airfields, and other potential high-density traffic areas (e.g., parachute activity areas and ultra-light/hang glider/glider sites, etc.) within 5 nautical miles (NM) of any planned VFR route or airspace boundary. Applicable airfield approach control frequencies in the vicinity of class B, C, and D airspace will be annotated and briefed on all such flights. In addition, annotate and brief the intersection of crossing Instrument Flight Rules (IFR) Military Training Routes (IR)/ VFR Military Training Routes (VR) (if applicable) and any other possible areas of conflict. Review pilot's and Weapon System Officer's (WSO) low altitude charts for compatibility and accuracy. (T-3)

2.7.4.1. VR/IR Charts. Annotate all charts with headings, maximum/minimum route structure altitudes, minimum safe altitudes (MSA), and route abort altitude (RAA). If MSA changes along the intended route of flight annotate an MSA for each leg of the route. If the aircrews uses a single MSA they will clearly annotate it on every page of the chart. (T-3)

2.7.4.2. MOA/Restricted/Warning Area Charts. Aircrew using a single MSA will clearly annotate it on the chart. Aircrew using multiple MSAs or local MSAs within the operating area will ensure all MSAs and associated constructs are clearly defined and annotated on the chart. (T-3)

2.7.4.3. MSAs and RAAs will be a minimum of 1,000 feet above the highest obstacle/terrain (rounded up to the next 100 feet) within the lateral limits of the route or operational area, but in no case less than 5 NM either side of planned route corridor. (T-3)

2.8. Chemical, Biological, Radiological, Nuclear, High-Yield Explosive (CBRNE). **Attachment 3** contains procedures for operations in a CBRNE-threat environment.

Chapter 3

NORMAL OPERATING PROCEDURES

3.1. Air Refueling.

3.1.1. Air refueling operations are authorized along published or special tracks/anchors. In addition, aircrew may conduct en route refueling (i.e. "random refueling") with Air Traffic Control (ATC) approval. For information concerning air refueling airspace, rendezvous types, and air refueling operations procedures, refer to ATP-56(B), *Air-to-Air Refueling*; Federal Aviation Administration JO 7610.4M, *Special Operations*; FLIP AP/1B, *Military Training Routes*; and T.O. 1B-1B-1, *Flight Manual USAF Series B-1 Aircraft*.

3.1.2. Military Assumes Responsibility for Separation of Aircraft (MARSA):

3.1.2.1. MARSA between the tanker(s) and the receiver(s) begins when the lead tanker aircrew advises ATC they accept MARSA for the formation.

3.1.2.2. After the lead tanker declares MARSA, ATC assigned course or altitude changes prior to the rendezvous completion will automatically terminate MARSA. Once the rendezvous is completed, ATC may make heading and altitude assignments with the tanker's concurrence and MARSA will remain in effect. (T-1)

3.1.2.3. After rendezvous, receiver(s) will remain within 3 miles of the tanker until MARSA is terminated. (T-1)

3.1.3. Rendezvous (RV).

3.1.3.1. RV Delta (Point Parallel Rendezvous). Receiver aircraft shall arrive at the Air Refueling Control Point (ARCP) no earlier than the scheduled Air Refueling Control Time (ARCT) -5 minutes and depart no later than ARCT +10 minutes. If unable to meet timing tolerance, attempt to contact a unit scheduler/duty officer for a new rendezvous time. If unable to schedule a new rendezvous time, air refueling is permitted provided all aircraft receive ATC clearance. (T-1)

3.1.3.2. RV Golf (En Route Rendezvous). Aircraft shall arrive at the Rendezvous Point ±5 minutes of the scheduled rendezvous time. If unable to meet timing tolerance, attempt to contact a unit scheduler/duty officer for a new rendezvous time. If unable to schedule a new rendezvous time, air refueling is permitted provided all aircraft receive ATC clearance. **Note:** Aircrews must be aware arriving outside the –5 / +10 minute window for RV Delta or the ±5 minute window for RV Golf may result in a conflict with other aircraft scheduled in the refueling airspace. If a conflict arises between two formations, the formation within their timing tolerance will take precedence. (T-1)

3.2. Low Altitude Training. Conduct low altitude training in specifically approved areas.

3.2.1. Domestic Low Altitude Military Training Routes (MTR). Refer to FLIP AP/1B, *Military Training Routes*, for airspace restrictions and contact the airspace Point of Contact (POC) through the local airspace manager to ensure the most current information is used for planning.

3.2.2. Route Criteria. Lateral separation is preferred to over-flight of noise complaint areas.

3.2.2.1. TF/Visual Contour (VC) minimum altitudes will provide at least 200 feet clearance above man-made obstructions within the route corridor or five miles of the planned route, but in no case will be lower than the minimum altitude published in FLIP AP/1B, *Military Training Routes*. Where surface is the published minimum operating altitude in FLIP AP/1B, man- made obstructions less than 200 feet above ground level (AGL) were not considered in route design. (T-3)

3.2.2.2. For routes and other training areas not covered above, aircrew will use set clearance planes providing at least 200 feet clearance above man-made obstructions within the route corridor/planned routing or, they will avoid the obstruction by at least 2 miles laterally. (T-3)

3.2.3. IR Training Activity:

3.2.3.1. Scheduling. Comply with the scheduling requirements of the route originating/scheduling activity. Confirm entry tolerances with the scheduling agency. If the originating/scheduling activity does not provide entry tolerances aircrew will enter only at scheduled time ±2½ minutes. If the aircrew cannot make the scheduled entry within ±2½ minutes, they may use subsequent primary or alternate entry points/times provided the airspace has been scheduled and briefed. (T-1)

3.2.3.2. Instrument routes are one-way. While flying an IR do not turn more than 90-degrees off of route centerline. (T-1)

3.2.4. Hazardous Conditions. Relay any safety hazard (e.g. icing, turbulence, thunderstorms, bird concentrations etc.) through a Pilot Weather Report (PIREP) to the controlling agency and to any other aircraft operating in the area through flight service.

3.2.5. Bird Strikes. Comply with Bird/Wildlife Aircraft Strike Hazard (BASH) program guidance IAW AFI 91-202, *The US Air Force Mishap Prevention Program*, and Air Force Pamphlet (AFPAM) 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques*. Generally, the hour before and after sunrise and sunset presents an increased threat of a bird strike, with migration seasons posing a significant hazard at different times. Units should check the Avian Hazard Advisory System (AHAS) (**http://www.usahas.com**), contact their base Civil Engineering wildlife expert, or Air Force Safety Center BASH team for further information on times of increased bird activity. (T-3)

3.2.6. Weather Requirements. Aircrew should attempt to update weather information prior to entering training airspace if they anticipate any significant weather changes. (T-3)

3.2.7. Altitude Variation. Altitude variation is the difference between indicated pressure altitude with a local (QNH) altimeter set and actual (true) altitude above mean sea level (MSL). Pilot-to Metro Service (PMSV) can provide forecast altitude variation. In flight, aircrew may approximate altitude variation by taking or evaluating an altitude calibration (ACAL) and comparing MSL altitude to Offensive Avionics System (OAS) altitude (For example, a 2,420 MSL pressure altimeter reading and a 2,000 ft OAS altitude indicate a -420 ft altitude variation). Also, if the aircraft radar altimeter indicates less than 600 ft while at the MSA/RAA altitude variation is greater than -400 feet.

3.2.7.1. In an IR route when the altitude variation exceeds -400 feet the MSA/RAA altitude no longer provides safe terrain clearance. Aircrews are not restricted during day

and Visual Meteorological Conditions (VMC). At night or in Instrument Meteorological Conditions (IMC) aircrews may fly TF without using MSA; however, if an aircrew requires flight at MSA (due to a flyup or mandatory IFR leg) the aircrew will abort the route. (T-3)

3.2.7.2. In SUA when the altitude variation exceeds -400 feet aircrews may continue low altitude operations if they can raise their MSA without exiting the airspace. Aircrews will increase their MSA by at least the amount of the altitude variation. (T-3)

3.2.8. Low Altitude Navigation. If aircraft position is uncertain in night/IMC, aircrew will maintain TF until they can clear the terrain in the direction of flight and then abort the route. (T-3)

3.2.9. Combat Altimeter Setting. During day VMC, aircrews may compute, set, and maintain computed true altitude in the aircraft pressure altimeters. Enter the training area using the latest ATC/ Flight Service Station (FSS) altimeter then compute a combat altimeter setting after established at TF or VC altitudes. Reset altimeters using current ATC/FSS information before entering IMC and before climbing to MSA/RAA altitude.

3.2.10. Abort Procedures. Aircrew will use the following guidance when aborting any low altitude training area. (T-1)

3.2.10.1. VMC Abort Procedures. Maintain safe separation from the terrain and comply with VFR altitude restrictions. Squawk applicable (Identification, Friend or Foe/Selective Identification Feature (IFF/SIF)) modes and codes and attempt to contact a controlling agency. If unable to maintain VMC, comply with the procedures in **3.2.10.2**

3.2.10.2. IMC Abort Procedures. Immediately climb to, or above, the computed MSA/RAA and maintain the preplanned ground track. If necessary, execute lost wingman procedures. If deviations from normal route/area procedures are required, or if the MSA/RAA is higher than the vertical limits of the route/area, squawk emergency. Contact the appropriate controlling agency and obtain an IFR clearance. If exit from IMC is not possible and an IFR clearance cannot be immediately obtained, cruise at the appropriate VFR hemispheric altitude until clearance is received.

3.2.10.3. Individual Aircraft Abort Procedures. If an individual aircraft aborts during low altitude training, that aircraft will ensure formation deconfliction and immediately notify the flight of intentions.

3.2.10.4. Multiple Aircraft Abort Procedures. If the entire formation must abort low altitude training, all aircraft will immediately establish radio contact while placing appropriate radars and air-to-air (A/A) Tactical Air Navigation (TACAN) to operate/on. The lead aircraft will direct altitude separation, headings, and airspeeds. Establish positive radar and/or visual contact before the formation performs any climbing maneuver other than to establish immediate altitude separation and maintain a safe terrain clearance.

3.3. Night Vision Goggle (NVG) Procedures. While both pilots on NVGs is the preferred employment configuration, there are no restrictions to single pilot NVG operations when qualification level and/or NVG availability precludes dual pilot NVG operations.

3.3.1. During mission planning, aircrew will review lunar illumination and elevation, anticipated ground light sources, weather for the planned route of flight, and consider weapons/expendable effects for their impact on NVG operations. (T-3)

3.3.2. Each crewmember whose duties require the use of NVGs will preflight their respective NVGs IAW T.O. 12S10-2AVS9-2, *Technical Manual Image Intensifier Set, Night Vision Type AN/AVS-9*, and, when available, use the Hoffman ANV 20/20 or equivalent infinity focusing device. This device is preferred over an eye lane for NVG preflight. (T-2)

3.3.3. Do not fly with NVGs unless the cockpit is modified with NVG compatible lighting.

3.4. Formation.

3.4.1. General. Flight/Mission leads will establish, brief, and debrief the contract, roles, and responsibilities and execution of each flight member. If any flight member cannot fulfill their basic responsibilities, contracts, or other assigned tasks, they will immediately communicate that information to the Flight/Mission Lead. Flight/Mission Leads will task element leads/wingmen based on their ability to fulfill basic responsibilities and other assigned tasks. For additional formation considerations, reference AFTTP 3-3.B-1, *Combat Aircr*aft *Fundamentals – B-1*, and AFTTP 3-1.B-1, *Tactical Employment—B-1*. (T-3)

3.4.1.1. Flight/Mission Leads will brief a formation deconfliction/blind/get well plan for every phase of flight and ensure every flight member understands the plan. All flight members are responsible for executing the briefed plan. (T-3)

3.4.1.2. Wake Turbulence Awareness. All formation members must understand wake turbulence/wingtip vortices hazards associated with flying in formation. AFMAN 11-217 Volume 1, *Instrument Flight Procedures*, contains information on the characteristics and effects of wake turbulence.

3.4.2. Authorized B-1 Formations. For additional guidance, refer to AFTTP 3-3.B-1, *Tactical Employment – B-1*:

3.4.2.1. Route/Observation. The Route/Observation position is 30 to 70 degrees aft of the lead's or tanker's 3/9 line with 150 to 1,000 foot aircraft separation.

3.4.2.2. Fluid. The Fluid position is 30 to 70 degrees aft of leads 3/9 line with 1,000 to 3,000 foot aircraft separation. The formation envelope is a "donut" around the lead aircraft. Aircrew will use Fluid for those situations where they anticipate moderate maneuver potential (e.g., holding in a tactical environment, rejoins during departure, tactical recoveries, maneuvering around clouds or when striking an area target with near simultaneous time-over-targets (TOT)). (T-3)

3.4.2.3. Wedge. The Wedge position is 30 to 70 degrees aft of lead's 3/9 line with 3,000 feet to 3 miles separation. The formation envelope is a "donut" around the lead aircraft.

3.4.2.4. Line Abreast (LAB). The LAB position is 0 to 30 degrees aft of lead's 3/9 line with 3,000 feet to 3 NM separation. The formation envelope is a "donut" around the aircraft.

3.4.2.5. Trail. The Trail position is aft of the 3/9 line with ½ to 3 NM spacing. Trail requires a minimum of 500 foot altitude separation if inside 1 NM. Trail does not require altitude separation if aircraft remain separated by at least 1 NM.

3.4.2.6. Stream. The Stream position is flown with 3-9 NM separation. During low altitude, aircraft within a flight may fly different altitudes provided formation position is maintained. If not flying the briefed altitude inform the formation.

3.4.3. Ground/Taxi Operations.

3.4.3.1. When ice, snow, or water is present on taxi surfaces, pilots will increase spacing and reduce taxi speeds as appropriate. (T-3)

3.4.3.2. Every member of the flight will review and understand the takeoff data. Pilots should place particular emphasis on takeoff and abort factors during abnormal situations such as a wet runway, heavy gross weights, and abort procedures for formation flights. (T-3)

3.4.4. Takeoff. The minimum takeoff interval from the same runway is 30 seconds or when the previous aircraft in the formation is airborne, whichever occurs first. Abort calls are mandatory when any formation member aborts the takeoff.

3.4.5. Departure:

3.4.5.1. VMC. Close to and maintain the pre-briefed formation. No calls are required as long as the wingman maintains visual contact.

3.4.5.2. IMC. All aircraft will follow the Blind procedures in **paragraphs 3.4.8.2** until all trailing aircraft establish radar and/or visual contact, and called "Tied" or "Visual". After that point, no further radio calls are required. If radar and visual contact is subsequently lost, resume the Blind procedures. (T-3)

3.4.6. Rejoins: (T-3)

3.4.6.1. Mission Leads will brief airspeed and configuration. If not at an established rejoin/get well position or visual, ML will also pass reference heading, altitude deconfliction and reference position. (T-3)

3.4.6.2. Mid-Mission Rejoins. A mid-mission rejoin should provide sufficient time beyond the planned rendezvous point to affect the rejoin. Prior to the rendezvous lead will be directive by specifying altitudes for all aircraft, airspeed, heading, and formation position for the wingman (or wingmen) to assume.

3.4.6.3. During Night/IMC rejoins, wingmen will maintain 1,000 feet of vertical separation until rejoined. During Day/VMC rejoins, wingmen will maintain 1,000 feet of vertical separation until they establish visual contact.

3.4.7. Lead/Position Changes. During a lead change the Flight Lead will transfer all navigation, lead position, command and control (C2) communications and tactical flight call sign to the wingman. During a position change the Flight Lead will transfer only tactical navigation and the lead position unless briefed otherwise. The Flight Lead reserves the right to maneuver the formation and/or direct a position change back at any time and will provide specific guidance during the mission brief or at the time of position change execution for all other delegation of duties or responsibilities (radios, profile management, etc.).

3.4.7.1. Lead/Position Change in IMC. In IMC, lead will initiate a lead/position change from a stabilized wings level attitude. Maneuvering aircraft shall maintain at least ½ NM lateral separation from all other aircraft. (T-3)

3.4.7.2. Lead/Position Change in VMC. Flight leads shall not initiate a lead/position change, unless the aircraft assuming the lead is in a position from which they can safely initiate the lead/position change and maintain visual contact. (T-3)

3.4.7.3. All lead changes will ensure a positive transfer of lead authority is accomplished. (T-3)

3.4.8. Flight-path Deconfliction:

3.4.8.1. Apply the following rules for flight path deconfliction during maneuvering.

3.4.8.1.1. Normally, the wingman is responsible for flight path deconfliction.

3.4.8.1.2. Lead becomes responsible for deconfliction when the wingman calls "Blind" or maneuvering places lead within the wingman's "blind cone."

3.4.8.1.3. Except when maneuvers place the wingman in front of lead, wingmen must maneuver relative to the flight lead and maintain visual contact. Normally, wingmen should cross above lead when deconfliction is required. (T-3)

3.4.8.2. Blind Calls. Use the following procedures when visual, Link 16 datalink and radar contact within the formation is lost. (T-1)

3.4.8.2.1. When any flight member calls "Blind," the other flight member(s) will immediately respond with "Visual," "Tied," or "Blind". If blind, flight members will also report location and altitude. If the other flight member(s) responds with "Visual" or "Tied" they are responsible for deconfliction until the first crew regains contact and calls "Visual" or "Tied."

3.4.8.2.2. When all flight members are blind the Flight Lead will take action to establish and maintain altitude separation, and will call initiating and rolling out of all turns, starting any climbs or descents, passing each 5,000 foot altitude increment and leveling off. Flight members will maintain altitude separation until visual or radar contact is regained.

3.4.8.2.3. When there is not a timely acknowledgment of the original "Blind" call and altitude separation is in doubt, the flight member initiating the "Blind" call will call "Knock-It-Off," maneuver away from the last known position of the other flight member(s) and increase vertical spacing. Use Lost Wingman procedures in **paragraph 7.8** if the situation warrants. Refer to AFI 11-214, *Air Operations Rules and Procedures*, for Knock-It-Off procedures.

3.4.9. Operations Check (Ops Checks). Accomplish sufficient ops checks to ensure safe mission accomplishment. (T-3)

3.4.9.1. Aircrew will perform Ops Checks:

3.4.9.1.1. At level-off after takeoff.

3.4.9.1.2. Prior to each Dissimilar Air Combat Tactics (DACT) engagement or intercept.

3.4.9.1.3. Prior to entering an air-to-surface range and after departing the range.

3.4.9.1.4. Following air refueling.

3.4.9.2. Aircrew will, at a minimum, check the following items during Ops Checks:

3.4.9.2.1. Central Air Data Computers (CADC) (AOA indicators within .8 degrees)

3.4.9.2.2. Hydraulic panel

3.4.9.2.3. Engine instruments

3.4.9.2.4. Fuel controls/total fuel

3.4.9.2.5. Oxygen system

3.4.9.2.6. Electrical system

3.4.9.2.7. Cabin altitude

3.4.9.2.8. Automatic Flight Control System Mode Select Panel

3.4.9.2.9. Surface Position Indicator (SPI) (stab position)

3.4.9.2.10. Ejection seat status

3.4.9.2.11. Nearest emergency airfield

3.4.9.2.12. LINK/MDS status

3.4.9.3. For formation flights, Mission Leads will initiate ops checks.

3.4.10. Radio Procedures. (T-3)

3.4.10.1. The Flight Lead or Mission Lead shall develop and brief a communication plan.

3.4.10.2. Ultra High Frequency (UHF) radio normally will be the primary means of communication between aircraft. Do not fly formation on training sorties without interplane communications capability, except in an emergency. Except for loss of radios, all flight members will maintain a common frequency. All capable aircraft should monitor the same ATC frequency unless mission requirements dictate otherwise. (T-3)

3.4.10.3. Unless directed otherwise in operational plans, formation aircraft should use individual call signs during rejoins, air refueling operations, after formation breakup and during emergency situations. (T-3)

3.4.10.4. Use brevity codes and other terminology IAW AFTTP 3-2.5, *Multi-Service Brevity Codes*; AFI 11-214, *Air Operations Rules and Procedures*; AFTTP 3-1.B-1. *Tactical Employment—B-1*; and B-1 Mission Standards.

3.4.10.5. No Radio (NORDO) Procedures.

3.4.10.5.1. During VMC, use the following guidance for mutual support of a NORDO aircraft in the formation.

3.4.10.5.1.1. When the lead aircraft is NORDO, lead will inform the wingman with a wing rock. The wingman will acknowledge with a wing rock and move to the outer limits of Route/inner limits of Fluid. The wingman will take the lead and the NORDO aircraft will move aft to establish Route/Fluid on the new lead. (T-3)

3.4.10.5.1.2. When a wingman is NORDO, the wingman will move to the outer

limits of Route/inner limits of Fluid and give lead a wing rock. Lead will acknowledge with a wing rock and terminates maneuvering IAW AFI 11-214, *Air Operations Rules and Procedures*. (T-3)

3.4.10.5.1.3. The recognition of a NORDO situation in IMC may be difficult. Aircraft should remain in current formation position using all available means of deconfliction including radar, A/A TACAN, and altitude separation to the maximum extent possible. On arrival at the destination or divert base the formation should proceed to an instrument approach fix (IAF) with the NORDO aircraft in trail stacked down at the IAF altitude and the other aircraft 1,000 feet above. At the IAF the NORDO aircraft will execute the approach while the other aircraft will remain in holding, terminate MARSA with ATC, and coordinate for their own approach. (T-3)

3.4.11. Dissimilar Formations. Aircrew will apply normal formation procedures during dissimilar formation as applicable while giving special consideration to aircraft performance differences. The Flight/Mission Lead will brief flight members on flight responsibilities, proper formation position (to ensure adequate wingtip clearance), and aircraft-unique requirements for each phase of flight. (T-3)

Chapter 4

INSTRUMENT PROCEDURES

4.1. Approach Category. The B-1 is approach Category E. Use approach Category D minimums in an emergency/divert situation where no Category E minimums are published provided:

4.1.1. A straight-in approach is flown.

4.1.2. The aircraft gross weight allows final approach airspeed of 165 Knots Indicated Airspeed (KIAS) or less.

4.1.3. The missed approach segment of the approach, if required, is flown at 255 knots True Airspeed (KTAS) or less. Aircrews must realize that at high pressure altitudes and high temperatures normal missed approach procedures may allow the aircraft to exceed 255 KTAS and in turn place the aircraft outside the obstacle clearance guaranteed in the missed approach segment. **Note:** Units may request MAJCOM assistance to have Category E minimums published for airfields used on a recurring basis for emergency/divert practice approach work.

4.2. Navigation. The B-1 is approved to use internal navigation system (INS)/Doppler Velocity System mode, with a radar position update at least every 3 hours, for operations in basic area navigation (RNAV) (BRNAV) airspace or routes. An aircraft that has successfully completed a precision alignment, may conduct BRNAV operations for a maximum of 7 hours in INS only mode with no radar updates. The B-1 is not certified to fly RNAV terminal procedures to include approaches, departures, and arrivals.

4.3. Simulated Instrument Flight. Aircrew will not use vision restricting devices to simulate instrument flight. (T-3)

4.4. Airborne Instrument Landing Approach (AILA). Aircrew may practice AILAs provided:

4.4.1. A published approach procedure, as defined by AFI 11-202V3, *General Flight Rules*, is used with a designated final approach fix (FAF). This does not restrict accomplishing an AILA when cleared for a visual approach from the radar pattern.

4.4.2. ATC clearance is obtained for the specific approach procedures selected.

4.4.3. The appropriate ATC facility has been advised that an airborne directed radar approach will be flown in conjunction with the requested approach. (T-2)

4.4.4. VMC must prevail from the FAF to the missed approach point/decision height. Aircrew may only fly AILAs under lower weather conditions during emergency situations where no other compatible approach is available.

4.4.5. The AILA is terminated and pilot navigation will be resumed any time it becomes apparent to any crewmember that the aircraft will exceed the parameters established for the published procedures. (T-1)

Chapter 5

AIR EXPENDABLE EMPLOYMENT

5.1. Responsibilities. Units must ensure that all personnel concerned are familiar with Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3212.02, *Performing Electronic Attack in the United States and Canada*; AFI 11-214, *Operations Rules and Procedures*; AFI 11-202V3, *Flying Operations – General Flight Rules*; and Air Combat Command Instruction (ACCI) 10-707, *ACC Electronic Attack Training and EMCON Procedures*.

5.2. Flare Procedures.

5.2.1. In case of an inadvertent flare drop, contact the applicable airspace controller and advise them of the incident. Note the approximate location and estimated damage and immediately safe the expendable countermeasures (EXCM) system.

5.2.2. Units will develop local procedures to handle hung/hot flare situations. (T-2)

5.3. Towed Decoy Procedures. (T-3)

5.3.1. Mission Leads will brief ALE-50 deploy, transmit, and sever procedures any time their use is anticipated. Additionally, mission leads will have a contingency plan in the event an ALE-50 fails to sever. At a minimum, the contingency plan will cover min risk routing to a recovery base avoiding populated areas, 1B-1B-1, *Flight Manual USAF Series B-1 Aircraft*, section 3 procedures for landing with decoy in tow, and airfield-specific instructions.

5.3.2. Units will develop local procedures to handle ALE-50 fail-to-sever situations.

Chapter 6

AIR TO SURFACE WEAPONS EMPLOYMENT

6.1. References. AFI 11-214, *Air Operations Rules and Procedures*, contains air-to-surface procedures and restrictions applicable to all aircraft. This chapter specifies procedures and restrictions applicable to B-1 operations. Qualifications and scoring criteria are contained in AFI 11-2B-1V1, *B-1 Aircrew Training*.

6.2. Planning Guidance. Units will ensure aircrews have current range information prior to flight. Aircrews will review and comply with all applicable rules, regulations, technical orders, and range/area procedures when carrying weapons. Units will establish local procedures IAW **Chapter 8** of this instruction for this activity. (T-2)

6.3. In-flight Procedures.

6.3.1. Target and Guided Weapon Checks.

6.3.1.1. Accomplish the Bomb Steer or Launch Acceptability Regions (LAR) check over open water or sparsely populated areas to the maximum extent possible.

6.3.1.2. For combat operations, aircrew may accomplish Bomb Steer or LAR system checks with live weapons on board by over flying an en route point designated as a target subject to the following restrictions:

6.3.1.2.1. The check is briefed and meets requirements of local instructions or Special Instructions (SPINS).

6.3.1.2.2. All crewmembers are at their primary duty stations for the check.

6.3.1.2.3. The OSO verbalizes all switch positions while running the pre-release and release checklists and the DSO confirms the switch positions.

6.3.1.2.4. Modifiable Ballistics Weapons (MBW). The OSO will place the NUC LOCK/UNLOCK switch to LOCK and/or the CONV ARM/SAFE switch to SAFE no later than 1+20 Time-To-Go (TTG) to release. (T-3)

6.3.1.2.5. Guided Weapons. The CONV ARM/SAFE switch will remain in the SAFE position for the LAR check. The OSO NUC LOCK/UNLOCK switch may be checked in the UNLOCK position and the pilot NUC switch may be checked in the REL position granted the LAR check is accomplished outside the weapon LAR and the MSL AUTO/MAN switch is not placed in AUTO. (T-3)

6.3.1.2.6. The crew will disable the target once the Bomb Steer or LAR check is completed. (T-3)

6.3.1.2.7. Store bay doors remain closed throughout the Bomb Steer or LAR check.

6.3.2. Weapons Employment Training.

6.3.2.1. Aircrew will release weapons only on designated weapon ranges or approved release areas. (T-2)

6.3.2.2. Aircrew will adhere to range restrictions, briefed release criteria, release clearance from the range control officer (RCO), and any other applicable employment guidance. (T-2)

6.3.2.3. Aircrew may accomplish Pre-Release checklist items prior to release when carrying weapons. However, the Bomb Release Mode Switch and the Missile Launch Mode Switch will both remain in MANUAL until release clearance is received, within range boundaries, and the aircrew is ready to release weapons. (T-3)

6.3.2.4. Aircrew will confirm the target location using valid on-board/off-board cues prior to weapons release to ensure on-range weapon impacts. Examples of available means include, but are not limited to radar, targeting pod (TGP), other aircraft sensors, map plots, data links, radio communications, talk-ons with joint terminal attack controllers (JTAC), RCOs, other aircrew members, etc. (T-3)

6.3.2.5. Aircrew may accomplish multiple weapons deliveries at night and/or in IMC if range patterns and procedures which ensure positive aircraft separation are established and briefed.

6.4. Hung Weapons.

6.4.1. After an unsuccessful release, contact the RCO for authorization to release or jettison hung weapons in a suitable area, if local guidance allows. Follow RCO instructions and T.O. guidance. The original target may be used for hung weapon jettison if coordinated with the RCO.

6.4.2. For contingency operations, hung weapons will be jettisoned IAW SPINS and/or unit guidance. (T-2)

6.4.3. If hung weapons are not jettisoned, the crew will accomplish the post release/abort checklist and return directly to home station or other suitable landing base, avoiding over-flight of populated areas. Air refueling is authorized to ensure safe recovery of the aircraft. **Note:** An In-flight Emergency (IFE) need not be declared for a hung swing arm provided all weapons on the rack reflect either a blocked (B), present (P), or not present (X) status on the WSO's [D] page. (T-3)

6.5. Simulated Weapons Attacks Following Actual Weapon Releases. Conduct simulated attacks provided:

6.5.1. No release system, indicator, or weapon bay door malfunction exists.

6.5.2. Post release/abort checklist is complete.

6.5.3. Release system is in Full Simulation.

Chapter 7

AIRCREW AND AIRCRAFT OPERATIONAL LIMITS AND RESTRICTIONS

7.1. Scope. This chapter adds aircraft limitations and restrictions to those already specified in flight manuals and apply to all aircrew.

7.2. New/Modified Aircraft Equipment/Weapons. Aircrew not qualified or certified in the operation of new or modified aircraft equipment will not operate that equipment on any flight unless under the supervision of a current and qualified instructor of like specialty unless otherwise specified by MAJCOM guidance. (T-2)

7.3. Crew Restrictions.

7.3.1. Maximum number of individuals authorized in flight is four.

7.3.2. Aircrew will accomplish seat changes only when the aircraft is at a safe altitude (i.e., MSA during low altitude operations or traffic pattern altitude during transition). Pilots will not conduct seat swaps with only two pilots on board the aircraft. (T-2)

7.3.3. Single WSO Flights. Flight surgeons, third pilots, incentive flight participants, etc., flying in the DSO position will be briefed on, at a minimum, the following: (T-3)

7.3.3.1. Equipment operations (ladder/hatch operation, power latch reset/EMUX control interrupt panel, Central Integrated Test System (CITS) monitoring, and aft station temperature control).

7.3.3.2. Safety of flight indicators (flight parameter indicators (FPI) and attitude indicators, radar altimeter, navigation (NAV) prime data).

7.3.3.3. Emergency procedures to include egress procedures.

7.4. Unusual Attitudes Recovery. Aircrew will not intentionally place the aircraft in attitudes of greater than plus or minus 10 degrees pitch or bank angles greater than 45 degrees for the purposes of practicing recoveries. Aircrew will not practice unusual attitude recoveries at night, in IMC, or below 15,000 feet AGL. (T-3)

7.5. Flight Characteristics.

7.5.1. Flight characteristics include:

7.5.1.1. Configured Approach to Stall Demonstration.

7.5.1.2. Aft Wing Approach to Stall Demonstration.

7.5.1.3. Stability Control and Augmentation System (SCAS) Off Demonstration.

7.5.2. Flying Training Unit (FTU)/Flight Instructor Course (FIC) qualified instructors may perform flight characteristic demonstrations in flight provided they:

7.5.2.1. Perform the maneuvers during daylight hours.

7.5.2.2. Remain clear of clouds throughout the maneuvers.

7.5.2.3. Perform all maneuvers (except SCAS off demonstrations) above 8,000 feet AGL.

7.5.2.4. Do not perform either Approach to Stall demonstration with weapons onboard the aircraft.

7.5.2.5. Ensure the aircraft's center of gravity is on target prior to any Approach to Stall demonstration.

7.5.2.6. Ensure all crewmembers are strapped into their ejection seats with their helmets on.

7.6. Fuel Minimums. The usable fuel reserve requirements in AFI 11-202V3, *Flying Operations – General Flight Rules*, and MAJCOM supplements apply except as listed in **Table 7.1**.

Table 7.1. Fuel Minimums.

12,000 lbs	Emergency Fuel
16,000 lbs	Min Fuel - Final Landing
40,000 lbs	Min Fuel over Remote or Island (No alternate required)
60,000 lbs	Min Fuel over Remote or Island (Alternate required)

7.7. Formation. Aircrews will not conduct or perform any of the formation positions described in this instruction, or AFI 11-2B-1V1, *B-1 Aircrew Training*, until completing the appropriate formal training program unless under the supervision of a qualified instructor. (T-3)

7.7.1. Visual Formation. Aircrew will only fly visual formations (Route/Observation, Fluid, Wedge, and/or Line Abreast (LAB) during daylight hours (official sunrise to sunset). B-1 visual formation with greater than a two ship element may be flown in support of WIC syllabus requirements or with Operations Group Commander (OG/CC) approval. (T-3)

7.7.1.1. Equipment. (T-3)

7.7.1.1.1. Flight leads will tailor maneuvering for aircraft with degraded Stability Enhancement Function (SEF) capability.

7.7.1.2. Minimum Weather.

7.7.1.2.1. Aircrew flying visual formation at or above 5,000 feet AGL will remain clear of clouds with at least 2 NM visibility.

7.7.1.2.2. Aircrew flying visual formation below 5,000 feet AGL will remain in VMC with a ceiling no less than 1,500 feet AGL and 5 NM visibility.

7.7.1.3. Low Altitude.

7.7.1.3.1. Aircrew will only fly in the Stream, Wedge, or Line Abreast position during tactical maneuvering below 5,000 feet AGL. Aircrew will not fly the Wedge or Line Abreast position below 500 feet AGL.

7.7.1.3.2. Aircrew will not initiate or accomplish rejoins below 1,000 feet AGL.

7.7.1.3.3. Aircrew may fly in the Fluid or Route position below 5,000 feet AGL during departures, recoveries, or authorized flyovers. Flyovers in route/fluid are limited to 350 KIAS or less, unless both Aircraft Commanders are qualified and current in Low Altitude Visual Formation.

7.7.2. Route/Observation. Route/Observation is not a tactical employment formation. Aircraft will stabilize at 1,000 feet separation prior to proceeding closer to lead. (T-3)

7.7.3. Battle Damage Checks. When circumstances permit, flight leads should direct a battle damage check after actual weapon deliveries and/or prior to return to base (RTB). Do not perform the check at night or during IMC and fly no closer than Route formation spacing. (T-3)

7.8. Lost Wingman Procedures. Aircrew will use the following procedures if they cannot maintain visual contact and ensure positive separation when flying visual formation. In any lost wingman situation, immediate separation of aircraft is essential to maintain safety. Upon losing visual and radar contact with the leader, or if unable to maintain formation due to disorientation, the wingman will simultaneously execute the applicable Lost Wingman procedure. Once a wingman executes lost wingman procedures, the Flight Lead/Mission Lead must clear the wingman to rejoin. (T-3)

7.8.1. In wings level flight (climbing, descending, or level) simultaneously transition to instruments, inform lead, turn 15 degrees away and maintain new heading for 15 seconds, then return to the original heading and attempt to acquire lead on radar. Ensure 500 feet altitude separation. Return to formation with lead's permission or, if required, obtain a separate clearance from the controlling agency.

7.8.2. On the outside of the turn (climbing, descending or level), transition to instruments, roll wings level, and inform lead. Continue straight ahead to ensure separation prior to resuming turn and attempt to acquire lead on radar. Ensure 500 feet altitude separation. Return to formation with lead's permission or, if required, obtain a separate clearance from the controlling agency.

7.8.3. On the inside of the turn (climbing, descending or level), transition to instruments to maintain established bank angle, reduce airspeed by 10 KIAS to ensure clearance, and inform lead. Lead will simultaneously roll wings level, maintain airspeed, and acknowledge wingman's call with heading and altitude. If lead acknowledges the lost wingman call and confirms lead aircraft is wings level, the wingman will, after 15 seconds, roll wings level, establish 500 feet altitude separation, turn to lead's reference heading and attempt to acquire lead on radar. If lead does not acknowledge loss of visual contact, maintain established bank angle, establish 500 feet altitude separation, roll out on new heading, attempt to acquire lead on radar, and with lead's permission reform into trail formation position. If radar/visual contact cannot be reestablished, obtain separate clearance from the controlling agency.

7.9. Air Refueling Limitations and Restrictions.

7.9.1. Do not accomplish air refueling during training missions when:

7.9.1.1. In-flight turbulence is encountered that, in the opinion of any participant, results in marginal control of the receiver aircraft while in the refueling envelope.

7.9.1.2. The tanker or receiver has less than all engines operating (except in an emergency).

7.9.1.3. The tanker or receiver is unable to retract the landing gear (except in an emergency).

7.9.2. Disconnect Malfunctions. (T-2)

7.9.2.1. Without tanker disconnect capability (including tanker manual operation without tanker disconnect capability or receiver emergency override operation) aircrew will air refuel only under the following conditions:

7.9.2.1.1. When necessary to ensure safe recovery of the aircraft. Minimize contacts and contact time to that required for safe recovery of the aircraft.

7.9.2.1.2. When necessary to complete contingency operations, deployment, redeployment, or when specifically directed by MAJCOM.

7.9.2.2. Conduct emergency override (manual boom latching) training with receiver instructor pilot (IP) supervision. Brief procedures during mission planning. Coordinate receiver pilot and boom operator procedures IAW applicable refueling T.O.s. Receivers must demonstrate disconnect capability prior to accomplishing override operations.

7.9.3. Air Refueling Breakaway Training and Envelope Limits Demonstration. (T-1)

7.9.3.1. Do not accomplish breakaway training or demonstrate envelope limits while in contact unless the receiver system is in normal and the aircrew has checked tanker disconnect capability with the applicable receiver by either a boom operator initiated or a boom limit switch disconnect.

7.9.3.2. For breakaway training, the tanker pilot, boom operator, and the receiver pilot must coordinate the maneuver before its actual accomplishment. This coordination must include when the maneuver will occur and who will give the command of execution.

7.9.4. Maximum Air Refueling Altitude. Normal training sorties should conduct air refueling at or below the maximum refueling altitudes at 1.3G available. (T-3)

7.10. Low Altitude Limitations. (T-2)

7.10.1. Minimum Altitudes. Low Altitude Training is limited to no lower than 500 feet AGL on all training missions with the following exceptions listed in **Table 7.2**.

Table 7.2. Minimum Altitudes for Low Altitude Training.

	Visual Contour	Day/VMC TF	Night/IMC TF
Aircrew under FIC Instructor IP supervision **(In support of MAJCOM formal training syllabus, or with OG approval)**	500’ AGL	200’ AGL	500’ AGL

Aircrew under 77 WPS IP or Test IP supervision	300’ AGL	200’ AGL	500’ AGL
Functional Check Flight (FCF) qualified aircrew	500’ AGL	200’ AGL (to accomplish required bias checks on terrain following systems)	500’AGL
Minimum altitudes for military training routes in FLIP AP/1B, *Military Training Routes*, and those provided by the local airspace managers at the originating activity will take precedence if higher than the altitudes listed above.			

7.10.1.1. A Show of Force is not a weapons delivery maneuver and will be flown IAW minimum altitude restrictions listed above.

7.10.1.1.1. Minimum altitude for use of the targeting pod is no lower than aircrew Low Altitude Training (LOWAT) category minimum altitude.

7.10.2. Minimum weather for Visual Contour (and TF when aircrew are not night/IMC TF certified) is limited to daytime only with minimum weather of 1,500 foot ceiling and 5 miles visibility (or higher as defined in FLIP AP/1B, *Military Training Routes*). TF operation above cloud decks in VMC conditions is not restricted.

7.10.3. Night/IMC TF Operations. Only aircrew that are night/IMC TF certified or are conducting night/IMC TF checkout IAW AFI 11-2B-1V1, *B-1 Aircrew Training*, will fly night/IMC TF.

7.10.3.1. The terrain following system must be fully operational to conduct TF operations. Additionally, both pilots will select TER FLW on their Vertical Situational Display (VSD) during night or IMC TF operations. One pilot may select BU on their VSD while the other pilot is in TER FLW during TF operations in day/VMC conditions.

7.10.3.2. Pilots will not use first and second detent positions to maintain TF altitudes. During night or IMC, pilots will not use first detent other than to increase the set clearance plane or to climb to MSA/RAA.

7.10.4. Do not use Offensive Radar Set (ORS) quiet mode during night/IMC below 5,000 feet AGL.

7.10.5. Do not initiate the penetration to low altitude or continue low altitude training if any of the following conditions exist:

7.10.5.1. Any flight control system malfunction denies the pilot a safe margin of control.

7.10.5.2. Loss of Real Beam Ground Map (RBGM) and High Resolution Ground Map (HRGM), during IMC. Aircrew may perform RBGM and HRGM off/out operations during VMC only. During night VMC, climb to MSA until radar malfunction is corrected.

7.10.5.3. Loss of INS(s) during night/IMC. Aircrew may operate INS(s) off/out during day VMC.

7.10.5.4. Loss of Avionics Control Unit Complex (ACUC) during night/IMC. Aircrew may perform ACUC off/out low altitude operations during day VMC while attempting to recycle the ACUC.

7.10.5.5. Either the OSO or DSO does not have a single, operable, multi-function display (MFD). (T-3)

7.10.5.6. Loss of all attitude reference systems (Gyro Stabilization System (GSS) and INS). Both aft station attitude indicators must be fully operational for low altitude operations during night/IMC. (T-3)

7.10.5.7. Loss of all radar altimeter channels. Aircrew may continue low altitude activity at MSA.

7.11. Radar Restrictions. Obtain permission to activate ORS Electronic Protection (EP) modes through HQ ACC/A3TW on a case-by-case basis. In order to operate the ORS with EP enabled, the airspace must be clear of Radio Frequency (RF) collection assets. Additionally, the airspace controlling agency must monitor for unplanned RF collection assets and have procedures to terminate ORS EP operations if RF collection assets arrive.

7.12. NVG Restrictions.

7.12.1. Do not use NVGs for low altitude visual contour flight. Do not use NVGs to fly low altitude below MSA without the TF system engaged.

7.12.2. Do not use NVGs during air refueling contacts or pattern operations. After takeoff do not use NVGs until reaching 2,000 feet AGL or MSA, whichever is higher. On arrival remove NVGs no later than the final approach fix.

7.13. Takeoff and Landing Limitations. (T-3)

7.13.1. Aircrews will not takeoff with a tailwind component in excess of 10 knots on a dry runway or 5 knots on a wet runway.

7.13.2. Takeoff with crosswind components greater than 26 knots requires OG/CC approval.

7.13.3. Landing with steady state winds in excess of 35 knots requires OG/CC approval and will be to a full-stop.

7.13.4. Reference **Table A5.1** for landing pattern limitations and restrictions. If mission requirements dictate, the OG/CC may authorize recovery within the maximum flight manual limitations.

7.13.5. Aircrew will not practice no flap/slat full stop landings.

7.13.6. Aircrew will not practice traffic pattern operations under the following conditions:

7.13.6.1. Any engine shutdown.

7.13.6.2. Unable to set military power on all four engines using the normal throttle system.

7.13.7. Aircrew will not perform overhead patterns at night.

7.13.8. SCAS Failure. Normal touch-and-go landings or low approaches are permitted with a PITCH AUG 1, ROLL AUG 1, YAW AUG 1, and/or SPOILER 1 caution light illuminated.

7.13.9. Aircrew will make all landings within the runway touchdown zone (runway threshold to 3,000 feet). The optimum B-1 touchdown zone is 1,000 feet to 2,000 feet beyond the threshold.

7.14. Navigation Equipment. (T-3)

7.14.1. An INS must be operational as the prime navigation model for takeoff on all missions except for flight in the local area during day VMC. Missions outside the local area requiring INS in-flight alignment may launch with Operations Supervision approval provided VMC can be maintained until the INS is aligned.

7.14.2. Do not takeoff with the GSS inoperative (steady illumination of the GSS caution light), unless performing a simulated GPS-out sortie in an INSR-modified aircraft. GPS-out flight considerations must be briefed during mission brief including but not limited to INS alignment procedures and radar position update points.

7.14.3. The two primary attitude modes (INS and GSS) will be operational for night/IMC flight.

7.14.4. Selecting Dead Reckoning (DR) as the prime navigational model for training is not considered loss or degradation of the INS.

7.14.5. Do not take off if the INS and GSS headings differ more than 4 degrees (unless staying in the local area under day VMC).

7.14.6. Both aft station attitude indicators and must be fully operational for takeoff.

7.14.7. ACU Reloads and INS Air Alignments.

7.14.7.1. Do not practice in-flight ACU reloads or INS coarse air alignments at night or in IMC unless the GSS is operational and selected and the TACAN is operational.

7.14.7.2. During any in-flight ACU reload or INS air alignment, practice or actual, maintain straight and level flight to the maximum extent possible and crosscheck VSD attitudes with the standby attitude indicator and the aft station attitude indicators.

7.14.7.3. When the ACU complex and/or all INSs are not fully operational aircrew must maintain VMC to the maximum extent possible, regardless of GSS status.

7.15. Emergency Limitations.

7.15.1. Do not practice in-flight emergency procedures with weapons loaded on the aircraft. (T-3)

7.15.2. Do not practice compound emergencies during flight (unless specifically required for upgrade training). (T-3)

7.15.3. Aircraft Operations with One Engine Inoperative. Aircrew will not takeoff with one engine inoperative from start of takeoff roll except during emergency evacuation, with wing commander approval or when directed by MAJCOM. (T-2)

7.15.4. During an in-flight emergency the most experienced or qualified pilot should make the landing. As in all situations the aircraft commander should balance the experience, skill, and proficiency of the crewmember flying against the complexity of the event to be flown. (T-3)

7.15.5. Aircrews will declare an IFE for any of the following situations: (T-3)

7.15.5.1. Any time an Emergency Procedure (EP) checklist states "land as soon as possible."

7.15.5.2. Any situation where aircrews refer to a T.O. 1B-1B-1, *Flight Manual USAF Series B-1 Aircraft*, Section 3 Landing Checklist.

7.15.5.3. Any planned landing with other than normal wing, flap/slat or gear position, or normal braking capability.

7.15.5.4. In any case where current or foreseeable system failures could make immediate ground assistance (e.g., fire, medical, maintenance, supervision) advisable.

7.15.5.5. If any doubt exists in the opinion of the aircrew or Supervisor of Flying (SOF) about the safety of the aircrew or aircraft's performance.

7.16. Aircrew and Aircraft Limitations.

7.16.1. Aircrews will not taxi, takeoff, or land when the measured Runway Condition Reading (RCR) is less than 9 without OG/CC approval. (T-3)

7.16.2. Structural Limitations. The following restrictions are a result of the Aircraft Structural Integrity Program (ASIP) and are imposed to increase the life of the airframe. Unnecessary additional weight and overall "G" loading are key factors in reducing the life of the aircraft. Aircrew should be aware of the ASIP and realize smoothness in all phases of flight reduces unnecessary wear and tear on the aircraft. Unnecessary additional gross weight is the single most damaging factor to the aircraft. Units should reduce fuel loads to the minimum required to accomplish the mission. (T-3)

7.16.2.1. For gross weights between 275,000 and 300,000 pounds, aircrews are limited to a maximum of two approaches. This restriction does not apply when aircrews require multiple approaches for formal training or when necessary for safety of flight. (T-3)

7.16.2.2. Units will plan sortie fuel loads with ASIP and fuel conservation considerations in mind. Units and aircrew should request the minimum fuel load required to complete the mission and land at or below 230,000 pounds gross weight unless required fuel reserves dictate otherwise. (T-3)

7.16.2.3. Aircrew should restrict maximum afterburner climb-outs to syllabus training, ATC requests, safety of flight, or those climbs required for tactical threat/weapons employment. (T-3)

7.16.3. Operational G-Limits. (T-3)

7.16.3.1. Aircrew will adhere to the following peacetime operational G-limits:

7.16.3.1.1. 15 and 20 Wing. Limit to 1.5g. T.O. 1B-1B-1, Flight Manual USAF Series B-1 Aircraft, limits the B-1 to 1.5g maximum at 15 and 20 wing.

7.16.3.1.2. 25, 45, and 55 Wing. Limit to 1.5g. T.O. 1B-1B-1, *Flight Manual USAF Series B-1 Aircraft*, may allow more g's (dependent on GW), however, the potential for exceeding the structural limits outweighs the additional .5g capability in the peacetime environment.

7.16.3.1.3. 65 and 67.5 Wing. Limit to 2.5g. T.O. 1B-1B-1, *Flight Manual USAF Series B-1 Aircraft*, may allow more g's (dependent on GW), however, the potential for exceeding the structural limits outweighs the additional .5g capability in the peacetime environment.

7.16.3.2. Document aircraft over-g's when the aircraft is flown outside of the parameters outlined in T.O. 1B-1B-1 *Flight Manual USAF Series B-1 Aircraft*.

7.16.3.2.1. Momentary deviations outside of the operational limits may not constitute a "over g" unless also outside of the parameters in T.O. 1B-1B-1, *Flight Manual USAF Series B-1 Aircraft.*

7.16.3.2.2. Aircrew experiencing an over-g (whether flagged by CITS or observed by the aircrew) will terminate the mission and accomplish a controllability check. Aircrew will annotate aircraft configuration, gross weight, and observed over g in AFTO Form 781A, *Maintenance Discrepancy and Work Document*."

7.16.4. In addition to the requirements set forth in AFI 11-202V3, *Flying Operations – General Flight Rules*, aircrew will not use cameras during takeoffs, landings, and any activity below 1,000 feet AGL without OG/CC approval. (T-3)

7.16.4.1. Aircrew and assigned intelligence personnel will not share or distribute cockpit recordable media with anyone outside of their respective MDS without approval from the Wing Commanders. (T-3)

7.16.5. Aircraft Tire Wear. The Maximum Wear Limit (MWL) for authorized B-1 tires (Goodyear and Michelin Aviator/Air-X) is three cords. Once the third cord is showing, the tire is unserviceable and requires replacement. The MWL applies to both main and nose gear tires on the B-1. A visible red cord is only an indicator and should not be used to determine the serviceability of a tire due to the fact that not all tires will possess a red cord. The MWL is the only true indicator of tire wear. (T-3)

7.16.6. Overheated/Hot Brakes. Aircrew will not quick turn (i.e. engine running crew change, hot/warm pit refuel, etc.) an aircraft that lands with a known or suspected brake overheat condition (any brake temperatures above 600ºF). Maintenance personnel are required to perform landing gear and anti-skid operational inspections IAW T.O. 1B-1B-6, *B-1 Work Unit Code Manual*, which requires shutting down engines and thereby terminating any quick turn option by the aircrew. (T-3)

7.16.6.1. Aircrew identifying actual or suspected brake overheat condition via CITS parameter monitor code, main caution panel BRAKE TEMP light or who otherwise suspect a brake overheat condition will immediately notify maintenance personnel and anticipate shutting down engines.

7.16.6.2. Aircrews on the front half of a quick turn will anticipate and plan for heavy weight landing conditions when returning to the airfield in order to mitigate the occurrence of hot brakes.

7.16.6.3. Taxi operations are permitted if the overheat condition no longer exists.

7.17. Weapon Employment Restrictions.

7.17.1. Aircrew should withhold weapons when the release will exceed aircraft T.O. limits, CG limits, briefed track/timing tolerances, or deconfliction for fragmentation. (T-3)

7.17.2. While carrying weapons, do not conduct: (T-3)

7.17.2.1. Simulated bomb or missile runs.

7.17.2.2. Unusual maneuvers.

7.17.2.3. Approach to stall.

7.17.2.4. Touch-and-go landings.

7.17.3. Aircrew may accomplish low altitude training and electronic attack (EA) with retained weapons provided they do not select or designate targets.

7.17.4. During training missions, aircrew will not open weapon bay doors during flight with weapons on board other than for intentional release or jettison. During contingency operations, OG/CC may approve aircrew to open weapon bay doors with weapons on board with the intent of ensuring proper door operation provided the aircrew can confirm they are over sparsely populated areas, preferably over water. (T-3)

7.18. Supersonic Flight. During training sorties, aircrew will fly supersonic only within the confines of designated supersonic areas (e.g. MOA, ATCAA, SUAS, or over oceans). Aircrew will report any unauthorized flight at or above Mach 1.0 to the squadron commander and notify the Operations Group airspace manager of the occurrence using an AF Form 121, *Sonic Boom Log*. Consult AFI 13-201 ACC Supplement 1, *Airspace Management*, for further information on supersonic operations.

7.19. Publications. Aircrew will carry on board for each flight, at a minimum, one full copy of T.O. 1B-1B-4, *Flight Manual Supplement CITS Operator USAF Series B-1 Aircraft*, and Section III of T.O. 1B-1B-1, *Flight Manual USAF Series B-1 Aircraft*. (T-2)

Chapter 8

LOCAL OPERATING PROCEDURES

8.1. General. This chapter provides a consolidated framework for units to supplement local operating procedures. IAW AFI 33-360, *Publications and Forms Management*, the paragraph method is the only authorized way to supplement an AFI and units must arrange added material according to the basic publication.

8.1.1. Units may publish guidance in a single, stand-alone local operating instruction instead of supplementing this AFI.

8.1.2. Added or stand-alone procedures will not be less restrictive than those contained elsewhere in this volume. (T-2)

8.1.3. This chapter is not intended to be a single source document for procedures contained in other directives or regulations. Avoid unnecessary repetition of guidance provided in other established directives; however, reference to those directives is acceptable when it serves to facilitate location of information necessary for local operating procedures.

8.2. Local Operating Guidance. Note: Units may supplement the following paragraphs for local operating guidance:

8.2.1. Introduction.

8.2.2. General Policy.

8.2.3. Ground Operations.

8.2.4. Flying Operations.

8.2.5. Weapons Employment.

8.2.6. Abnormal Procedures.

8.3. Recommended Guidance. If applicable, include procedures for the following in the appropriate section of **8.2**:

8.3.1. Command and Control.

8.3.2. Fuel Requirements and Bingo Fuels.

8.3.3. Mission Plan Fly-Fly and Show & Go Procedures.

8.3.4. Diversion Instructions.

8.3.5. Jettison Areas, Procedures and Parameters (IFR/VFR).

8.3.6. Controlled Bailout Areas.

8.3.7. Local Weather Procedures.

8.3.8. Unit Standards.

8.3.9. NVG Procedures

8.3.10. Cross-Country Procedures.

8.3.11. Search and Rescue and On-Scene Commander Procedures.

8.3.12. BASH program guidance IAW AFI 91-202, *The US Air Force Mishap Prevention Program,* and AFPAM 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques*.

8.3.13. Environmental Restrictions to Flight Operations (winds, sea state, temperature, etc.) applicable to unit operating locations.

8.4. Coordination. Prior to publication, units will forward copies of the local supplement to MAJCOM and appropriate subordinate agencies for approval. If a procedure is deemed applicable to all B-1 units, it will be incorporated into the basic AFI volume. (T-2)

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Deputy Chief of Staff for Operations

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

ACCI 10-707, *ACC Electronic Attack Training and EMCON Procedures,* 13 September 13

AFI 11-2B-1 VOLUME 1, *B-1 Aircrew Training*, 23 December 2011

AFI 11-202 VOLUME 3, *General Flight Rules*, 22 October 2010

AFI 11-214, *Air Operations Rules and Procedures*, 14 August 2012

AFI 11-215, *USAF Flight Manuals Program (FMP)*, 22 December 2008

AFI 13-201 ACC Supplement 1, *Airspace Management*, 7 October 2013

AFI 13-204, Volume 3, *Airfield Operations Procedures and Programs*, 01 September 2010

AFI 33-360, *Publications and Forms Management*, 25 September 2013

AFI 91-202, *The US Air Force Mishap Prevention Program* 5 August 2011

AFMAN 11-217 VOLUME 1, *Instrument Flight Procedures,* 22 October 2010

AFMAN 33-363, *Management of Records,* 1 March 2008

AFPAM 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques*, 1 February 2004

AFPD 11-2, *Aircraft Rules and Procedures,* 19 January 2012

AFPD 11-4, *Aviation Service,* 1 September 2004

AFTTP 3-1.B-1, *Tactical Employment -- B-1 (Classified),* 5 Oct 2012

AFTTP 3-3.B-1, *Combat Aircraft Fundamentals--B-1*, 5 October 2012

AFTTP 3-2.5, *Multi-Service Brevity Codes*, 1 September 2012

Allied Tactical Publication (ATP)-56(B), *Air-to-Air Refueling*, 22 January 2010

AMCI 11-211, *Destination Airfield Suitability Analysis,* 21 December 2012

CJCSM 3212.02B, *Performing Electronic Attack in the United States and Canada for Tests, Training, and Exercises,* 15 October 2003

Federal Aviation Administration JO 7610.4M, *Special Operations*, 18 January 2007

FLIP AP/1B, *Military Training Routes*, 1 July 2010

T.O. 1B-1B-1, *Flight Manual USAF Series B-1 Aircraft*, Ch 13, 1 January 2014

T.O. 1B-1B-1-1, *Performance Data USAF Series B-1 Aircraft*, Ch 1, 15 October 2008

T.O. 1B-1B-6, *B-1 Work Unit Code Manual*, 1 March 2012

T.O. 12S10-2AVS9-2, *Technical Manual Image Intensifier Set, Night Vision Type AN/AVS-9*, 11 June 2008

Forms Adopted

AF Form 847, *Recommendation for Change of Publication*.

Air Force Technical Order (AFTO) Form 781, *ARMS Aircrew/Mission Flight Data Document***.**

AFTO Form 781 A**,** *Maintenance Discrepancy and Work Document.*

Abbreviations and Acronyms

A/A—Air-to-Air

AB—After Burner

ACAL—Altitude Calibration

ACC—Air Combat Command

ACCI—Air Combat Command Instruction

ACDE—Aircrew Chemical Defense Equipment

ACO—Airspace Control Order

ACU—Avionics Control Unit

AFI—Air Force Instruction

AFTTP—Air Force Tactics, Techniques, and Procedures

AGL—Above Ground Level

AILA—Airborne Instrument Landing Approach

AMC—Air Mobility Command

ANG—Air National Guard

AOA—Angle of Attack

AQFM—Airfield Qualification and Familiarization Manual

ARCP—Air Refueling Control Point

ARCT—Air Refueling Control Time

ASIP—Aircraft Structural Integrity Program

ASRR—Airfield Suitability and Restrictions Report

ATC—Air Traffic Control

ATO—Air Tasking Order

AWACS—Airborne Warning and Control System

BASH—Bird Aircraft Strike Hazard

BRNAV—Basic Area Navigation

BVR—Beyond Visual Range

C2—Command and Control

CAP—Combat Air Patrol

CADC—Central Air Data Computer

CBRNE—Chemical, Biological, Radiological, Nuclear, High-Yield Explosive

CF—Contributing Factor

CG—Center of Gravity

CHUM—Chart Update Manual

COMAFFOR—Commander of Air Forces

CONUS—Continental United States

CRM—Crew Resource Management

Cv—Cornering Velocity

CW—Chemical Warfare

DACT—Dissimilar Air Combat Training

DFP—Debrief Focus Point

DLO—Desired Learning Objective

DOD—Department of Defense

DR—Dead Reckoning

DRU—Direct Reporting Unit

DSO—Defensive Systems Officer

EA—Electronic Attack

EID—Emitter Identification Data

EMCON—Emissions Control

EP—Emergency Procedures or Electronic Protection

ETE—Estimated Time En Route

EXCM—Expendable Countermeasures

FAC—Forward Air Controller

FAF—Final Approach Fix

FCF—Functional Check Flight

FCGMS—Fuel Center of Gravity Management System

FEBA—Forward Edge of the Battle Area

FIC—Flight Instructor Course

FL—Flight Lead or Flight Level

FLIP—Flight Information Publications

FOA—Forward Operating Area

FSCL—Fire Support Coordination Line

FSS—Flight Service Station

FTU—Formal Training Unit

GCE—Ground Crew Ensemble

GCI—Ground Controlled Intercept

GDSS—Global Decision Support System

GSS—Gyro Stabilization System

GW—Gross Weight

HAS—Hardened Aircraft Shelter

HRGM—High Resolution Ground Map

HVAA—High-Value Airborne Asset

IAF—Initial Approach Fix

IAM—Inertially Aided Munitions

IAW—In Accordance With

IBS—Integrated Battle Station

ICAO—International Civil Aviation Organization

IFE—In-flight Emergency

IFF—Identification Friend or Foe

IFR—Instrument Flight Rules

IPE—Individual Protective Equipment

IMC—Instrument Meteorological Conditions

INS—Inertial Navigation System

IP—Initial Point or Instructor Pilot

IR—IFR Military Training Route

IWSO—Instructor Weapon System Officer

JMEM—Joint Munitions Effectiveness Manuals

JMPS—Joint Mission Planning System

JTAC—Joint Tactical Air Controller

KIAS—Knots Indicated Airspeed

KIO—Knock-It-Off

KTAS—Knots True Airspeed

LAB—Line Abreast

LAR—Launch Acceptability Region

LL—Lessons Learned

LOWAT—Low Altitude Training

MAJCOM—Major Command

MARSA—Military Assumes Responsibility for Separation of Aircraft

MBW—Modifiable Ballistics Weapon

MDA—Minimum Descent Altitude

MESL—Mission Essential Subsystem List

MFD—Multi-Function Display

ML—Mission Lead

MIDS—Multifunction Information Distribution System

MM—Monopulse Measurement

MOA—Military Operations Area

MOPP—Mission Oriented Protective Posture

MPS—Mission Planning System

MSA—Minimum Safe Altitude

MSL—Mean Sea Level

N/A—Not Applicable

NAF—Numbered Air Force

NAP—Navigation Action Point

NM—Nautical Miles

NORDO—No Radio

NVG—Night Vision Goggles

OAP—Offset Aim Point

OAS—Offensive Avionics System

OC—Optimum Cruise

ORM—Operational Risk Management

ORS—Offensive Radar Set

OSO—Offensive Systems Officer

OG/CC—Operations Group Commander

OPORD—Operations Order

OPR—Office of Primary Responsibility

PAR—Precision Approach Radar

PFPS—Portable Flight Planning Software

PIREP—Pilot Weather Report

POC—Point of Contact

PRNAV—Precision Area Navigation

RAA—Route Abort Altitude

RBGM—Real Beam Ground Map

RC—Root Cause

RCO—Range Control Officer

RCR—Runway Condition Reading

RF—Radio Frequency

RNAV—Area Navigation

RNP—Required Navigation Performance

ROE—Rules of Engagement

RTB—Return to Base

RTO—Range Training Officer

SC—Service Ceiling

SCAS—Stability Control and Augmentation System

SCP—Set Clearance Plane

SIF—Selective Identification Feature

SOF—Supervisor of Flying

SPI—Surface Position Indicator

SPINs—Special Instructions

SUA—Special Use Airspace

TACAN—Tactical Air Navigation

TDS—Towed Decoy System

TDY—Temporary Duty

TER FLW—Terrain Following

TF—Terrain Following

TGP—Targeting Pod

T.O.—Technical Order

TOT—Time Over Target

TR—Training Rules

TST—Time Sensitive Targeting

TTG—Time-To-Go

UHF—Ultra High Frequency

VC—Visual Contour

VDP—Visual Descent Point

VFR—Visual Flight Rule

VID—Visual Identification

VMC—Visual Meteorological Conditions

VR—VFR Military Training Route

VSD—Visual Situational Display

WAG—Weapons Attack Guide

WSO—Weapon System Officer

Terms

Attempted Release—The OAS issues a release pulse in either automatic or manual mode with all switches correctly positioned.

High Altitude Activity—Same as AFI 11-2B-1 V1, *B-1 Aircrew Training*. Above 25,000 feet MSL (For weapons delivery events above 17,000 feet MSL).

Hung Weapon—A live or inert weapon that does not separate from the aircraft following an attempted release. ***Note***: Weapons not released due to being blocked, a swing arm malfunction or a "slow switch status following squib fire" are considered retained if the "hung state" is removed and the fault clears following corrective action by the OSO.

Lead Change—Used during formation when the ML/FL transfers all navigation, lead position, command and control (C2) communications, and tactical flight call sign to the wingman. The ML/FL will usually not maneuver the formation or direct a lead change back once a lead change has occurred. Lead changes are typically used when an emergency or other extenuating circumstances exist such that the ML/FL can no longer fully control the formation.

Live Weapon—Actual munitions containing a primary explosive charge (MK-82, CBU-87, etc.).

Low Altitude Activity—Same as AFI 11-2B-1 V1, *B-1 Aircrew Training*. Below 5,000 feet AGL.

Medium Altitude Activity—Same as AFI 11-2B-1 V1, *B-1 Aircrew Training*. From 5,000 feet AGL to 25,000 feet MSL (For weapons delivery events from 5,000 feet MSL to 17,000 feet MSL).

Mission Lead—The Mission Lead is the aircrew member responsible for mission accomplishment. This includes planning, leading, and debriefing the mission. When

circumstances dictate, the Mission Lead does not have to be in the lead aircraft or position during the flight.

Operating Altitudes—Altitudes for all U.S. military training routes will be published in FLIP AP/1B, *Military Training Routes*. TF/VC altitudes will be based on a minimum altitude published for the route or the clearance plane settings developed by local airspace managers at the originating activity, whichever is higher. (T-1)

Position Change—Used during formation to make the wingman the tactical flight lead. The ML/FL will transfer only tactical navigation and the lead position unless briefed otherwise. The ML/FL reserves the right to maneuver the formation and/or direct a position change back at any time and will provide specific guidance during the mission brief or at the time of position change execution for all other delegation of duties or responsibilities (radios, profile management, etc.). Position changes usually occurs during training sorties where currencies/training requires it or when a non-mission aborting system malfunction requires the wingman to lead the formation while preserving two-ship employment. (T-3)

Retained Weapon—A weapon still on board the aircraft with no release attempted or after successfully releasing the intended number of weapons in a partial load. Weapons not released due to procedural errors are retained. ***NOTE***: Weapons not released due to being blocked, a swing arm malfunction or a "slow switch status following squib fire" are considered retained if the "hung state" is removed and the fault clears following corrective action by the OSO.

RNAV (Area Navigation)—A method of navigation that permits aircraft operation on any desired course within the coverage of station-referenced navigation signals or within the limits of a self-contained system capability, or a combination of these.

Show of Force—A maneuver intended to warn or intimidate an opponent and to demonstrate capability or will to act if provoked.

Visual Contour Flight—Operation at a predetermined altitude above the ground, following contours visually with radar altimeter crosscheck.

Weapon—Any live, inert, or training munitions.

Attachment 2

PASSENGER BRIEFING GUIDE

A2.1. Ground Operations. (NOTE: *Item will be briefed at the aircraft).

A2.1.1. Ramp safety (danger areas / hearing and eye protection)

A2.1.2. Foreign object damage (FOD) considerations

A2.1.3. Normal ingress and egress

A2.1.4. Strap-in procedures / proper use of restraints *

A2.1.5. Life support equipment *

A2.1.6. Oxygen system – Preflight and normal settings *

A2.1.7. Ejection seat procedures *

A2.1.8. Critical switches and controls *

A2.1.9. Safety precautions (e.g. stick/leg interference) *

A2.1.10. Prohibitions and restrictions

A2.1.11. Communications connections and use *

A2.2. Flight Overview and Profile.

A2.2.1. Takeoff and departure

A2.2.2. Route, air work, maneuvers

A2.2.3. Transfer of aircraft control

A2.2.4. Recovery, pattern, and landing

A2.2.5. In-flight checks (challenge and response)

A2.3. Abnormal Procedures. (NOTE: *Item will be briefed at the aircraft).

A2.3.1. Emergency ground egress *

A2.3.2. Abort

A2.3.3. In-flight emergency procedures

A2.3.4. Bird strike

A2.3.5. Smoke and fume elimination *

A2.3.6. Physiological *

A2.3.7. Ejection / bail out *

A2.3.8. Intercom failure *

A2.3.9. Oxygen Emergency Procedures – confirm passenger demonstrates mask operation and proper regulator settings *

A2.4. Questions?

Attachment 3

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND HIGH YIELD EXPLOSIVE (CBRNE) OPERATIONS

A3.1. General Information. Potential adversary use of CBRNE weapons against a friendly airfield presents a serious threat to flying operations. Although the most effective way for aircrews to avoid this threat is to be airborne before these weapons are detonated or dispersed and then land at a field that has not been contaminated, all personnel must be prepared to operate from a field that has come under CBRNE attack. Each air base should publish detailed CBRN procedures. The following information is for use when base-specific procedures are unknown or incomplete. (T-3)

A3.1.1. Counter-CBRN actions can be grouped into environments. First is where chemical or biological agents are dispersed from munitions or sprayed as an aerosol resulting in a cloud or rain of minute droplets. The nuclear environment is within range of any direct effect from a nuclear detonation. The radiological environment's hazard is radioactive dust that can originate as fallout from a detonation or from dispersal of radioactive material without a nuclear detonation -- a dirty bomb. Procedures in all environments except nuclear are similar -- use procedures and protective gear to avoid skin contact with or inhalation/ingestion of agents or particles.

A3.2. Mission Preparation. Determine the CBRN status at planned launch, recovery and divert bases. Know the current Mission Oriented Protective Posture (MOPP) level for relevant sectors of the launch airfield. Plan ground ops to minimize the time between leaving shelter and takeoff. If available, use additional aircrew to perform preflight duties to minimize flight crew exposure.

A3.3. Travel To/From the Aircraft and Aircraft Preflight. Step in the appropriate protective ensemble and carry other protective gear as required. If possible, travel to and from the aircraft in an enclosed vehicle to prevent contamination from agents or dust settling from the air. If travel on foot is unavoidable, choose a route that takes maximum advantage of available overhead cover (sun shades, buildings, etc.). If the aircraft is contaminated, ensure maintenance has accomplished spot decontamination and avoid contaminating your person during preflight. Take steps to avoid bringing contamination into the aircraft on helmet bags, map bags, etc. In a potential CBRN environment, keep aircraft hatch closed as much as possible when outside protective shelter. Post-mission, if there is any suspicion of aircrew contamination process through an aircrew contamination control area (ACCA).

A3.4. Ground Operations during Alarm Red (or Theater Equivalent).

A3.4.1. Before Taxi Out and After Taxi Back. If Alarm Red, or equivalent, occurs while the crew is outside the aircraft or in the chocks, shut down and exit the aircraft (if appropriate), take cover and don appropriate MOPP. This may require use of the ground crew mask. A hardened facility such as a hardened aircraft shelter (HAS) provides optimum protection. Ensure the safety of supporting ground crew; use hand signals if necessary.

A3.4.2. Ground Operations Outside the Parking Spot. Maintain contact with SOF, ATC, Command Post, etc. to remain aware of ground hazards and command direction. If Alarm Red, or equivalent, occurs while on the ground outside the chocks, there are two primary options. First is to taxi to an area available along the taxi route that provides increased

protection or dispersion. If protection is not available, the best option may be launch to survive contingent on fuel state, proximity to runway, nature of attack, etc. If protection or takeoff is not possible, attempt to exit the taxi flow. In extremis, especially with no protective mask available, select 100 percent oxygen and consider turning off the environmental control system and/or shutting down to avoid bringing agent/dust into the aircraft. Leave the aircraft hatch closed and await assistance.

A3.5. Airborne.

A3.5.1. Contamination. Becoming contaminated by chemical or biological agents while airborne is very unlikely. If chemical agent contamination occurred prior to takeoff, flight will dissipate the agent to some degree, but will not achieve complete decontamination. Flights of at least 2 to 4 hours are recommended, and lower altitudes are more effective than higher altitudes. Fly with the aircraft configured (gear and flaps extended) as long as possible to maximize the airflow in and around as many places as possible. There is no simple guidance for biological contaminants. If suspected, maintain maximum protective posture. If radioactive dust contamination is suspected, take measures to avoid skin contact, inhalation, or oral consumption. Seek decontamination assistance after landing

A3.5.2. During the Mission and RTB. Use command and control agencies to maintain awareness of command intent and the status of primary and alternate landing locations. Do not attempt to land during Alarm Red, or equivalent, situations unless there is no other option. Follow C2 directions and hold or divert. If holding, try to wait until Alarm Red, or equivalent, is terminated. When able, obtain updates on airfield status, ground hazards, and taxi routing. If landing in Alarm Black, expect a contaminated environment and MOPP 4. Droplet settling following a chemical or biological airburst attack can take up to one hour. If you believe the aircraft was contaminated before takeoff or while airborne, notify C2.

Attachment 4

STRANGE FIELD FAMILIARIZATION

A4.1. Use of Guide. The following procedures aid aircrew in their preparation for flights into strange airfields. This outline is a guide and aircrew should review only the information that is appropriate to their mission (for example, load bearing capacity need not be reviewed for flights into airfields with similar aircraft). Reference AFI 11-202V3, *Flying Operations – General Flight Rules*, for further guidance. (T-3)

A4.2. General Information. During mission planning, aircrews should review the following for each base of intended landing. (T-3)

A4.2.1. Airfield Suitability and Restrictions Report (ASRR) from the Global Decision Support System (GDSS) database. Per AFI 11-202 Volume 3, *Flying Operations – General Flight Rules*, each MAJCOM will establish specific policy on applicability, availability, and access procedures regarding the use of ASRR.

A4.2.1.1. A copy of the ASRR and individual airfield assessments from the GDSS database can be obtained by contacting the Air Mobility Command (AMC) Airfield Help Desk: **Airfield.Helpdesk@us.af.mil** or DSN 312-779-3112.

A4.2.1.2. Base Airfield Management Operations Section (AMOPS), per AFI 13-204 Volume 3, *Airfield Operations Procedures and Programs*, will provide aircrew a computer with a printer to process DoD NOTAMs and access the ASRR

A4.2.1.3. Refer to AMCI 11-211, Destination Airfield Suitability Analysis, for further information regarding ASRR and GDSS.

A4.2.2. FLIP Enroute Supplement.

A4.2.2.1. Traffic pattern altitudes and special practices.

A4.2.2.2. NAVAID maintenance periods.

A4.2.2.3. Facilities/services available, including radar coverage.

A4.2.2.4. Load bearing capacity of runways, taxiways and parking areas.

A4.2.2.5. Hours of operation.

A4.2.3. Airfield Qualification and Familiarization Manual (AFQM). Crews may review the Jeppesen Military Chart Service (JMCS) for additional airfield information and familiarization, however, per AFI 11-202 Volume 3, *Flying Operations – General Flight Rules*, USAF aircrews will not fly a non-US Government (USG) published instrument procedure that has not been reviewed to ensure conformance with the accepted standards by the appropriate Terminal Instrument Procedures (TERPS) office. Individuals can register for Jeppesen's eCharts Online at **http://www.jeppesen.com/gma/echarts**.

A4.2.4. FLIP Planning Documents.

A4.2.4.1. Special notices.

A4.2.4.2. Preferred routing.

A4.2.4.3. Terminal control areas.

A4.2.4.4. ICAO information.

A4.2.4.5. Foreign Clearance Guide (unclassified and classified version).

A4.2.4.6. Special Weapons Over-flight Guide (SWOG).

A4.2.5. Approach Plates.

A4.2.5.1. Airfield layout/obstacles/runway length and width.

A4.2.5.2. Final approach runway alignment.

A4.2.5.3. Approach/Airfield lighting.

A4.2.5.4. Navigation chart (review for local terrain features and AILA considerations).

A4.3. Arrival Planning.

A4.3.1. En Route Descent.

A4.3.1.1. Start descent point.

A4.3.1.2. Rate of descent required.

A4.3.1.3. Transition altitude.

A4.3.1.4. Terminal fix (IAF, FAF, Procedures turn fix, precision approach radar (PAR), etc.).

A4.3.1.5. Lost communications procedures.

A4.3.1.6. Emergency/minimum safe, sector altitudes.

A4.3.1.7. Review STARs, if applicable.

A4.3.2. Published Penetration.

A4.3.2.1. IAF/holding fix.

A4.3.2.2. Initial rate of descent required.

A4.3.2.3. Transition altitude.

A4.3.2.4. Altitude restrictions.

A4.3.2.5. Emergency/minimum safe altitudes.

A4.3.2.6. Final approach fix.

A4.3.2.7. Lost communications procedures.

A4.3.3. Final Approach--Published or Radar.

A4.3.3.1. Rate of descent.

A4.3.3.2. Timing.

A4.3.3.3. Weather minimums/MDA/VDP/DH.

A4.3.3.4. Missed approach procedures.

A4.3.3.5. Lost communications procedures.

A4.3.3.6. Transition to landing/runway environment.

A4.4. Airfield Support and Equipment.

A4.4.1. Availability of Jet A (approved).

A4.4.2. Availability of electrical starting unit (AC: 115/200v, 3 phase, 90kva; DC: 28v, 1500 amp, 72kw).

A4.4.3. Availability of universal tow bar and tug.

A4.4.4. Parking/display area maintains a minimum of 25 feet wing-tip clearance.

A4.4.5. Submit an AFTO Form 88, *Aircraft Pre-Fire Plan*, as required, to base operations and/or fire department.

A4.4.6. Classified material storage requirements.

A4.5. Departure Planning.

A4.5.1. Location of significant obstacles.

A4.5.2. Rate of climb/climb gradient required for obstacle clearance and ATC restrictions.

A4.5.2.1. All Engines Operating

A4.5.2.2. One Engine Inoperative Considerations.

A4.5.3. Emergency/minimum safe altitudes.

A4.5.4. Required departure routing, if any.

A4.5.5. Compatibility of NAVAIDs.

A4.5.6. Radar coverage.

Attachment 5

TRAFFIC PATTERN AND LANDING LIMITATIONS AND RESTRICTIONS

Table A5.1. Traffic Pattern and Landing Limitations and Restrictions.

Approach Type	Gross Weight	Crosswind Component	Weather	IP Supervision	Night	RCR
Normal Low Approach	300,000	N/A	Published Minimums	NO	YES	N/A
Normal Touch and Go (NOTE 1)	300,000	20 Knots	500 ft 1 NM NOTE 5	NO	YES	12
Full Stop Landing	300,000 NOTE 6	26 Knots NOTE 9	Published Minimums	NO	YES	9 NOTE 7
No Slat/Flap Low Approach	275,000	N/A	NOTE 2	NO	YES	N/A
No Slat/Flap Touch and Go (NOTE 1)	250,000	15 Knots	NOTE 2	NO NOTE 8	Only with IP Super-vision	Dry
½, ¼, and ¾ Flap Touch and Go (NOTE 1)	250,000	15 Knots	NOTE 2	YES	YES	Dry
Simulated loss of airspeed pen/app/ low	275,000	N/A	VFR Conditions	YES	NO	N/A
Sim Eng Out Low App (NOTE 3)	275,000	N/A	NOTE 2	FTU/FIC Only NOTE 10	YES	N/A
Sim Eng Out Full Stop (NOTES 1, 4)	275,000	10 Knots	NOTE 2	FTU/FIC Only NOTE 10	YES	Dry
Sim Eng Out Touch and Go (NOTES 1, 4)	275,000	10 Knots	NOTE 2	FTU/FIC Only NOTE 10	YES	Dry

SCAS Off Low Approach (NOTE 3)	275,000	N/A	NOTE 2	FTU/FIC Only NOTE 10	YES	N/A
SCAS Off Full Stop Landing (NOTE 1)	275,000	10 Knots	NOTE 2	FTU/FIC Only NOTE 10	NO	Dry
Slat Only Touch and Go (NOTE 1)	230,000	15 Knots	NOTE 2	FIC Only NOTE 10	NO	DRY
25º Wing No Slat/ Flap Touch and Go (NOTE 1)	250,000	15 Knots	NOTE 2	FIC Only NOTE 10	NO	DRY
AMI Out Touch and Go (NOTE 1)	300,000	15 Knots	NOTE 2	FIC Only NOTE 10	NO	12

Notes*:*

1. Go around if not in the designated touchdown zone. Runway length and RCR consideration must permit an aborted takeoff using computed landing ground run distance.
2. Weather required is 1,000 feet/2 miles visibility or circling minimums, whichever is higher.
3. Initiate go around/missed approach no lower than 200 feet HAT
4. Takeoff portion and unplanned go around requires symmetrical thrust.
5. May fly published minimums with an IP.
6. Full stop landings are authorized to T.O. 1B-1B-1, *Flight Manual USAF Series B-1 Aircraft*, gross weight limits in an Emergency or Safety of Flight situation.
7. Aircrews will not full stop when the measured RCR is less than 9 without OG/CC approval. (T-3)
8. SEF/SIS must be operational to conduct no-flap touch and go training without IP supervision.
9. If mission requirements dictate, the OG/CC may authorize aircraft recovery within maximum flight manual limitations.
10. Only aircrew under the supervision of an FIC IP (to include FIC IPs in operational units certified IAW AFI 11-2B-1V1, *B-1 Aircrew Training*) may perform FIC Only patterns. Only aircrew under the supervision of an FTU IP or an FIC IP may perform FTU/FIC only patterns.